"Ifalik consists of a coral reef surrounding a nearly circular lagoon, whose area, according to the U.S. Commercial Company's Survey (Maps), is .939 of a statute square mile. (Photo). Four islets rise above high-water mark. Toward the south and west are two small ones, one of them a mere sandspit. Two large ones, separated by a narrow channel, run the length of the eastern side of the lagoon and extend somewhat beyond it to north and south. The total land area is .569 of a square mile. The population is concentrated on the lagoon side of the two larger islands, Falālap and Falārik.

Traditionally each of the eight main canoe-houses faces a pass. All but one of these, however, are too shallow for anything larger than a canoe. The steamer pass is on the south, between Falārik and Ellā, the larger of the uninhabited islets. Because of a few large coral heads the entrance is narrow and winding. Their removal would straighten it, and make it wide enough for large ships. In the lagoon there is ample room and depth for anchorage, sheltered during the trade-wind by the two larger islands. Outside the lagoon there is anchorage to the southwest, near the entrance to the pass, sheltered during trade-wind weather by the islet Ellā. Natives say that in a west wind ships used to anchor on the eastern side, off the channel between the two large islands. Landing there must have been difficult at any time, because the reef is steep-to and a high surf nearly always running.

On Falārik the land slopes up very gradually from the lagoon side. About half way across it is level, with some hollow places. Toward the seaward (eastern and northern)

side it rises again. The highest land, which appears to be not more than 20 feet above mean sea level, is close to the seaward beaches. From this low ridge the land slopes away much more steeply to a narrow fringing reef.

All around Falālap the beaches are narrow, the slope up from shore relatively abrupt, as on the seaward side of Falārik. A ring of comparatively high land surrounds a central depression which takes up something like half of the area of the island. This conformation, and the extension of Falālap away from the lagoon, give it the appearance of a very small, nearly separate atoll, a little higher than usual, so that the center is a swamp instead of a lagoon."

Structurally, Ifaluk is a low coral atoll with a lagoon, that has a circumference of approximately five miles; it is circular, or according to Sievers, almost square.

Lütke said that there were four islands, but actually there are only three: the main island, Felādjĭk, the second largest, Falālăp, which adjoins it to the south, and the little isle, Elă. There is no Ifalouk Island in the circle of atolls, and the one which Lütke called Moay is [6] really Falālăp. A comparison of the first two drawings will prove this. Lütke's mistake is due to the fact that he made a separate little island out of the northwestern portion of the large one. Although Cheyne spoke of only three, Lütke's assertion was upheld over Meinicke until very recent times; Meinicke made Imoai and Falalap one and the same island.

The little sand island Elánelap was first discovered by the Hamburg South Sea Expedition; it is possible that it is one of the newest atolls. But this type of sand island can disappear again very easily in any natural disturbances. During the typhoon of 1907 a little sand island called Máje became merged with the large Felādjĭk, and it is now the new part of Sāgo village.

Lütke (1828)	Meinicke (1888)	Sarfert (1909)	Pac. Islds. Pilot (1933) Jap. Gov. Chart (1925)
Fararyk Ifalouk	Flarik	Felādjĭk	Flarik

2; Damm et al. --5-6 (1909) 1938 Woleaians-2
116, 133 Ifaluk

Moay	Imoai		
Ella	Ella	Elă	Ella
	Falalap	Falālăp	Flalap
		Elăńelap	

The reef is typical of atoll reefs; on the southeastern side it makes a large bulge, and it is supposed to have a circumference of five miles. In the south there is a shallow, narrow passage between the Elăn and Falālăp Islands; Sarfert says that the broader one between Falālăp and Felādjĭk is sixty meters wide. There are two landing places on the southwestern tip of Felādjĭk Island.

2: Damm et al. --114 (1909) 1938 Woleaians
116, 133 Aurupik

According to Brigham, the reef has a circumference of 2 1/2 miles, and there is no channel to the lagoon; an insufficient passage is on the SE side, but it permits the natives to bring their canoes over the reef to the beach at high tide. It may have been this difficulty which prevented the inhabitants from taking their boats to Lütke's ship when it sailed past the northern side of the island. The surf is very high, and the British Pacific Islands Pilot says you encounter it on the northern side if there are light southwest winds. It almost cost Sarfert his life; for, as he was going back to the "Peiho", his boat capsized...

2: Damm et al. --155 (1909) 1938 Woleaians
116, 133 Faraulep

Lütke said that structurally the Faraulep Island group was that of a typical coral atoll, containing three islets, and with a circumference not exceeding four miles. Hellwig describes it in his Journal in a very plastic manner, and with his own peculiar exactitude: "The atoll has three rather long, thickly wooded islands, which rise somewhat toward the interior; the lagoon is deep blue, with strips of light and dark green and sand banks which have a yellowish hue. Beyond this and the sand beaches you see the reef, which is clearly outlined on the outer side with the dazzling white chains of foam of the surf; this is especially high on the leeward side." His observation that the islands rise somewhat toward the interior is remarkable; on the main island, Faraulip, the rise is 23.8 meters!

4: Krämer--4 (1909) 1937 Woleaians
116, 133 Elato

[MR: From the British Pacific Islands Pilot, p. 504]: The Elato Islands, approximately 20 miles southeast of Olimarao, consist of two atolls. There are four islands on the northern one of the atolls and the largest of them is Elato at the northern end. Its elevation is 101 feet (30.8 meters) up to the tops of the trees and the ground is sandy.

On the eastern side of the atoll, approximately one mile southwest of Elato there is an entrance to the lagoon; it is about half a cable length in width and has a depth of 5-6 fathoms (9.1-11 meters). In February 1862 H. M. S. "Sphinx" sailed into the lagoon and anchored in a depth of 11 fathoms (20.1 meters) approximately 1/2 mile south of the western tip of Elato. In 1930 the population numbered 72.

The southern atoll with the islands of Toas and Uler on its southeastern side is separated from the northern atoll by a passage about 1-1/4 mile wide. A narrow passage through the reef is found about 2 cable lengths north of the island of Taos [sic]; all but small boats have trouble steering through it.

In this connection see the special plan on map 772 of the Admirality made after that of Japan. Map of the year 1925.

4: Krämer--4 (1909) 1937 Woleaians
116, 133 Olimarao

[MR: From the British Pacific Islands Pilot, p. 504]; The island of Olimarao is located on the northern side of the atoll-forming reef approximately 95 miles south southeast of the island of Gaferut; it is covered with coconut palms and other trees. Around the entire island the ground is steep and ill fitted for landing purposes.

On Falifi at the western extremity of the atoll trees grow luxuriantly, but there are no coconut trees included in the lot....

There are irregular depths at the northwestern side of the atoll, where the reef is marked by breakers at all times; there is no entrance to the lagoon on this side. On the southern side there are two shallow entrances; the eastern one is one half mile in width and the western one three cable lengths. It is reported that the depths in the lagoon are regular with no dangers (map 772).

4: Krämer--9
116, 133

(1909) 1937

Woleaians
Ifalik

Sŭteval (Sătewal) in the east of Lámotrek is at a distance of only 37 nautical miles from the latter, which is approximately the same as the distance of Ifaluk from Oleai. On map 93 a shoal is marked ten nautical miles NNE of Ifaluk...and it is said that it is covered by 12 meters of water; but a note is added which reads "supposedly even more shallow." Naturally this shoal is well known to the natives. On Lamotrek I learned that it was called Fas (=stone?) and that it lay dry at low water. The waves come together in this spot so that water columns shoot up to such a height that sometimes they may be observed from Ifaluk.

4: Krämer--183 (1909) 1937 Woleaians
116, 133 Woleai

These Woleai islands are arranged in the form of two semi-circles, which intersect at the island of Tagaulap; they are grouped in such a manner than an Arabic "3" is formed by them. The opening of this 3 is to the south. This large entrance in the reef exposes the lagoon freely to the southwestern monsoon and when it blows, the waves run high into the port. The latter, in addition, has many reef banks. One of the most dangerous shoals is found northeast of the island of Motegoau (Motagu) and .7 nautical miles west of Paliau. In case of violent winds of the type that often prevails at the time of the northeastern monsoon, the sea is very rough, and has breakers coming from all sides and meeting in a roaring confusion.

4: Krämer--185 (1909) 1937 Woleaians
116, 133 Woleai

Entrances to the Oleai group are the North Channel between Jalangifereil and Fareiles, the West Channel, and the Raur Channel east of Motegosu; the latter has an approximate width of 1/2 nautical miles and in the middle has a depth of 16 to 46 meters. An entrance that is practicable for canoes and boats is found between Tagaulap and Marijong. Next to it, in the direction of Tagaulap high breakers are found even when the breeze is slight. The surf is strongest almost exactly at the vertex of the semi-circles and at the time of the northeastern monsoon.

4: Kramer--185 (1909) 1937 Woleaians
116, 133 Woleai

Flalap (Wolea, Ulie), the northernmost and largest of the Oleai Islands, is triangular in shape and has a length of approximately one nautical mile. The coastal reef on the southern side ascends steeply, but it offers good landing places.

4: Krämer--186 (1909) 1937 Woleaians
116, 133 Woleai

The western lagoon of the Woleai Islands is wide and in general deep although it has scattered shoals. The entrance to it is shallow and large ships cannot pass through it.

4: Krämer--188-189 (1909) 1937 Woleaians
116, 133, 175, 103 Woleai

The true shape of the atoll has finally become known through the new English map. [189] The name Voleai appeared for the first time in 1608 in a letter of Pater Clain who gave it as Valayay; in 1706 it was given as Ulier,* in 1710 as Olie, and 1721 as Ulee according to Cantova.

*On Clain's map the names of the islands are: Parivu (Paliau), Raor (Raur), Ulier (Volea), Marioc (Mariong), Tacaylap (Tagaulap), Alingaray (Votagai) and Farilies (Falalis).

4: Krämer--203 (1909) 1937 Woleaians
116, 133 Woleai

Earthquakes are said to be not too rare. Lütke talks of great clefts in the reef on Wolea which he claims to be the result of earthquakes.

Volé́a or Falálap.*

Among the various islands of the group, the main island of Volé́a (which is otherwise known as Falálap, the "great land") is the most important. It has a hornshaped spur which projects in the direction of the NE monsoon seas and thus is triangular in shape; it is shown on the map of 1903. The southwestern side was slightly curved like a bay. From here to the tip of the island the distance was almost one kilometer. It was this large and wide aggradation that saved the inhabitants in the typhoon of 1907. According to the Japanese map, the typhoon increased the width of the land towards the NE by about 200 meters; on the other hand, the two northern sides of the triangle in the E and W were somewhat curved inland so that the isoceles triangle was changed more nearly approaching a cap form, as map 5 shows [VMM: see 4: Krämer 207]. Unfortunately due to [208] lack of time I myself was not able to survey the island, but I asked the second officer Gollert to take care of it in my place, and thus we are at least able to visualize what the northern tip looked like 2 1/2 years after the typhoon (map 5) [VMM: see 4: Krämer 207]. In the worse rubble some ponds with brackish water are left standing in places formerly occupied by taro swamps.

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*The same as the island of the Mogemog archipelago.

5: Kittlitz--150-51
116, 133

(1827-8) 1858

Woleaians
Elato
Lamotrek

The Elato group is composed of a chain of small islands, which are bound together by a common reef; there is no approach on the western side, and this may be the reason why nobody came to see us during the short time that we were there. There is supposed to be a good anchorage inside the lagoon, but the entrance is on the eastern side, consequently against the prevailing wind; usually the reverse is true on the coral groups, and the reef projects farthest against the wind so the deeper channels are found under the wind on the western and southern sides. Accordingly these three island groups [MR: Namurrek, Elato, and Namolia-ur], which lie so close together, are doubtless the highest portions of the same shallows whose real entrance is on the southern side; so that the Elato lagoon [151] is really only a part of the common lagoon of the whole group.

These coral islands all look about alike from the sea; narrow low strips of sand lie between the breakers on more or less exposed stony reefs.

5: Kittlitz--162-63 (1827-8) 1858 Woleaians
116, 133 Woleai

Early on the morning of the 9th of April we sailed, and our first task was to make a geographical survey of the southern side of the island group. As usual in the coral islands, there is a much smaller amount of land visible here; even the reef is mostly submerged, and during the day you can only recognize it by the bright green color of the shallows; at night [163] these places are very dangerous for ships when the Captains are not well acquainted with the waters.

6: Senfft--53
116, 133; 504

(no date) 1905

Woleaians
Woleai

The harbor in the southeast of the atoll is very good; the passage is large enough to admit even the largest boats. Flalap and Mariom Islands are now connected by a dune on which some plants are already growing. The channels which admit of passage by boats between Flalap and Paliau and between Paliau and Raur are now very narrow.

8: Senfft--284 (1905) 1906 Woleaians
116, 101, 175, 133, 136 Gaferut

This island [MR: Grimes] is known to the natives by the name of "Gaferut," but they have never visited it. They call it the "devil's island" and are afraid to come near it. Yet they were unable to explain their fear for not even any member of the crew of the ship had seen it. We reached the island on December 5 after dark and could not find any anchor ground. The captain sent some of his men on land who during the night were to maintain a fire in order that the ship could stay close to the land. At dawn I rowed ashore. The map of the Admiralty characterizes Grimes as an elevated island, but in reality it is a flat sandbank which in some places rises up to an elevation of 2 meters. The only type of vegetation is a species of mangrove. Apparently a strong storm hit the island a few months ago for most of the trees had lost their branches and many---including the strongest---had been completely uprooted. The fauna consists of innumerable sea birds, which had their loose nests either in the trees or on the level ground; furthermore there were coconut crabs and--to judge from the traces--large turtles, which do not visit the island but at night. The birds were so tame that they could be seized by hand. Gaferut, including the reef, has a length of about 1300 meters; exclusive of the reef it is 600 paces long and 300 paces wide. We could not find anchor ground during the day either.

14: Born et al--567 (1907) 1907 Woleaians
116, 133, 504 Ifalik

...we succeeded in negotiating the difficult entrance into the lagoon of the atoll, which winds between large coral blocks. On the chart only an entrance for small boats is shown, and ships usually anchor outside the reef at a depth of 9 to 16 fathoms.

16: Gt. Britain, H.O. --501 (no date) 1933 Woleaians
116, 133 Aurupik

"Eauripik or Kama islands, about 180 miles south-eastward of the Sorol islands, lie on the reef of an atoll which is generally low and steep-to. With light south-westerly winds there are usually breakers on the northern side of the atoll, but not on the southern side.

All the islets, with the exception of Edarepe, at the western end of the atoll, which is awash at high water, are covered with coconut palms. There is a jetty on the southern side of Eauripik which a boat can reach at high water.

There is no passage into the lagoon, but boats can cross the reef at high water."

16: Gt. Britain, H.O. --501 (no date) 1933 Woleaians
116, 133 Aurupik

"In 1921, the Japanese vessel Matsuye, when 3 1/2 miles south-south-eastward of Eauripik, experienced a current setting north-north-west at a rate of about one knot, which appeared to be caused by the direction of the wind.

In September, 1926, the Japanese warship Manshū found no current in a position about 6 miles southward of the same island."

16: Gt. Britain, H.O. --502 (no date) 1933 Woleaians
116, 133, 504 Ifalik

"Ifalik islands, about 30 miles eastward of Woleai island, lie on the eastern and southern part of the reef forming the atoll. Flarik and Flalap islands, on the eastern side of the atoll, are covered with coconut palms; Ella island has a few coconut palms showing above the other trees.

There is a narrow and shallow boat-passage between the reefs extending from Flalap and Ella islands. There are two piers on the western side of Flarik island, at the southern end, which can easily be reached."

16: Gt. Britain, H.O. --504 (no date) 1933 Woleaians
116, 133, 504 Lamotrek

"Lamotrek islands, about 5 miles eastward of Elato islands, consist of three wooded islets on a triangular atoll. Lamotrek islet, 107 feet ($32^{m}6$) high to the tops of the trees, lies at the eastern extremity of the atoll.

The passage about three-quarters of a mile southward of Pugue islet, the northernmost islet, is the widest and best of those leading into the lagoon, but during the north-east trade a heavy sea sets into the lagoon and caution is necessary. There is a passage about 2 cables wide, nearly in the middle of the southern side of the atoll; its position is difficult to detect, but it is a good passage when the north-east wind is strong. The next passage westward is about 1 1/2 cables wide; all the other passages are narrow.

Anchorage may be obtained on the western side of Lamotrek islet (Lat. 7°28'N., Long. 146° 24'E.), sheltered from north-easterly winds, but it is reported that during westerly winds the sea becomes rather rough. Landing can be made on a sandy beach on the western side of Lamotrek islet."

Geologically, these islands are of three forms: the coral islands, or atolls, represented by Ifaluk; those of sedimentary rock formation, such as Yap; and those of volcanic origin, like the northern Palaus."

37: Keiyosei--47 (1929-30) 1930 Woleaians
116, 133, 228 Woleai

The Okimoto Pearl Nursery is located between Korror and the isolated islands. The factory and residences of the supervisors are on Korror Island. The mother pearl nursery is at the Sedo (sand ground with shallow water) between the two islands. The Sedo is about 100 ken wide [JW: approx. 600 ft.], the water is clear, and water circulation is very good.

41: Bates & Abbott N-5 (1953) 1958
OR21 Woleai OR21
Ifaluk

FOREWORD

IFALUK is a small dot on the map: a half a square mile of land can hardly show much detail on any scale used for Pacific distances. Further, it is spelled "Ifalik" on most maps, through some accident in the history of official spelling for place names. The people who live there call their island in a way that might be rendered "Eefahlook" in a sort of English phonetic spelling. We figure that the people who live there ought to have the final say about the name of their island: hence our divergence from the map makers.

Ifaluk is one of the Caroline Islands, which form part of Micronesia. It is some 700 miles north of New Guinea, some 400 miles south of Guam, and about 1200 miles east of the Philippines. It is a part of the Trust Territory of the Pacific Islands, administered by the government of the United States.

Ifaluk is an atoll: a roughly circular reef, built by corals and other lime-secreting organisms, marking off a quiet lagoon in the open ocean, the reef in places piled up to form islets emerging a few feet above the level of the sea. Mr. E. H. Bryan, Jr., of the Bishop Museum, in Honolulu, has compiled a list of the islands of the world that could be classed as "atolls." He finds 409: 136 in Polynesia, 92 in Micronesia, 66 in Melanesia, 15 in Indonesia, 5 northwest of Australia, 68 in the rest of the Indian Ocean, 26 in the Caribbean Sea, and only one in the Atlantic. Atoll formation, then, is primarily a phenomenon of the tropical Pacific: and the word "atoll" carries with it the connotations of warm sun, of white beaches backed by graceful palms, of friendly dark-skinned people, and of an idyllic way of life.

Ifaluk, for us, lived up to these connotations, and we found our life there a continuously rewarding experience: an experience which, in writing this book, we are trying to share.

We tested several ways of meeting the problem of joint authorship. We tried being "we" which had a nice regal sound and worked well enough when we agreed. But we have a great talent for disagreeing,

41: Bates & Abbott N-5 (1953) 1958
OR21 Woleai OR21
Ifaluk

gauge wasn't unpacked and set up yet. A stiff wind came up in the afternoon and kept increasing in force. Late in the afternoon Tom came by with Maroligar, the number two chief. Tom pointed out across the lagoon to the west and said, "Maybe typhoon." Maroligar seemed somewhat worried as well. What the two wanted, apparently, was a weather prediction—from us newcomers to the tropical Pacific! It showed a touching and completely misplaced faith in the famous "American know-how." I was in charge of the meteorology department and I peered at the thermometer (79°F at 5:45 P.M.) and barometer (1005 millibars) but I was unable to draw any deductions from these helpful facts.

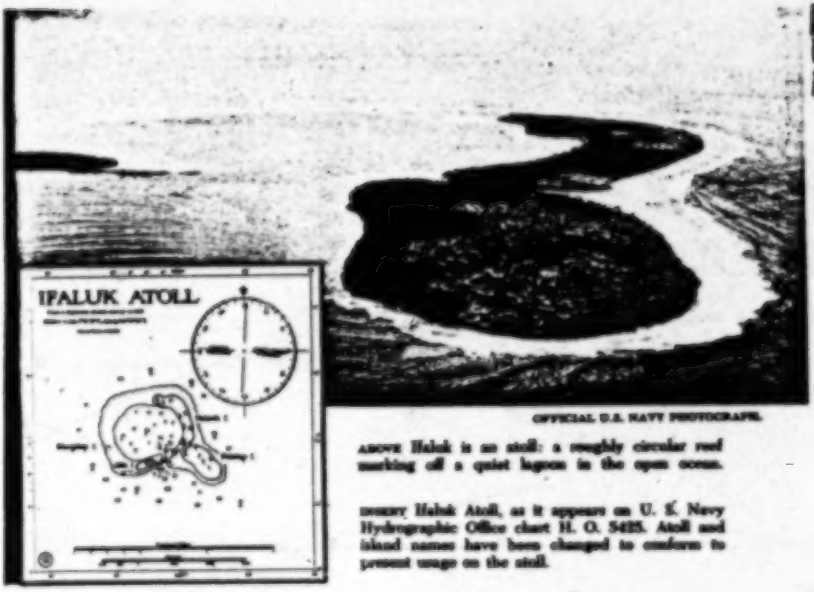
In the evening, quite a number of men gathered in back of the Fan Nap, clearly worried about the weather. Maroligar borrowed one of the big Navy battery flashlamps and learned how to turn it on and off. He wanted some sort of a light so that if the weather worsened during the night, he could round everyone up and lead them to some safer spot, perhaps the boulder ridge on the windward side of the island—the highest spot, some fifteen feet above sea level. The houses were mostly along the lagoon shore and Ted remembered that waves had reached to the Fan Nap on his previous stay, with a wind of considerably less than typhoon violence. Don and I read what there was on typhoons in the books we had brought along, and I tried to remember what I could about the characteristics of Caribbean hurricanes—but nothing helpful came out of this.

The wind settled down to a steady blow, and I comforted myself, going to sleep, by thinking that hurricanes struck suddenly, after a period of still, oppressive heat, so that this slow build-up of wind could hardly be dangerous—misinformation, but none-the-less comforting.

The next day, Saturday, started out cold, with a completely overcast sky. But the rain had let up, so we sallied forth to begin work. Our first project was to make a census of the people on the island. Ted had made a census on his 1948 visit and he wanted to get a record of the changes. For Don and me, the census would be an essential basis for our studies of "human ecology." Further, if we made the census our first item of business, it would give us an opportunity to meet all of the people on the island.

41: Bates & Abbott N-5 (1953) 1958
OR21 Woleai OR21
Ifaluk

131
133
102



OFFICIAL U.S. NAVY PHOTOGRAPH.

ABOVE Ifaluk is an atoll: a roughly circular reef marking off a quiet lagoon in the open ocean.

INSERT Ifaluk Atoll, as it appears on U. S. Navy Hydrographic Office chart H. O. 5425. Atoll and island names have been changed to conform to present usage on the atoll.

BELOW The chiefs turned the Fan Nap, the Men's House, over to us for our residence.

345
137
114

[P. 32 (A)]

41: Bates & Abbott N-5 (1953) 1958
OR21 Woleai OR21
Ifaluk

and then pace directly toward him. Don would sight on Tony (or me on arrival) to get the direction, and I would call back the paces so that Don could draw directly on the base map.

The main trail of Falarik, which I got in the habit of calling "the broad highway," or sometimes "el camino real," ran through the coconut grove parallel to the lagoon shore, generally twenty or thirty yards in from the water. It was about two yards wide, and neatly marked on each side by a row of moss-covered coral rocks. This broad highway ran between the Fan Nap and the lagoon, and passed directly in front of five of the big canoe houses that faced the lagoon along the Falarik shore. The sixth canoe house on Falarik was away from the trail on the point of land that jutted toward Falalap. There were also two canoe houses on Falalap, one facing the lagoon, and the other facing the pass between the two islands.

The canoe houses, clearly distinguishable on the aerial photographs, were convenient reference points in mapping. They served not only for the storage of canoes, nets, lines and other gear, but also as social centers for the men of the atoll. Groups gathered there to talk, or rest, or weave nets, or carry on the never-ending job of making twine or rope from sennit, coconut fiber. A big sea-going canoe was being built in the Falepenach canoe house, near the Fan Nap, during the summer of 1953. This provided me with a convenient and continuing subject for photography.

The broad highway ran for almost a mile along the lagoon shore of Falarik, extending considerably beyond the last habitation, toward the north end of the island, ending abruptly in the middle of nowhere. This northern tip of the island, beyond the end of the trail, was a wild tangle of vegetation, relatively little visited and little used. Except for this northwest tip, the whole of the lagoon margin of the island was a park-like coconut grove, kept clear of weeds or shrubs with almost no other kind of tree—only an occasional breadfruit tree near the household areas, and a few other things like the big *Barringtonia* by the Sabolap canoe house.

The entire course of the broad highway was thus through the open coconut grove. The habitations were mostly set at some distance back from the highway, near the "boondock line."

41: Bates & Abbott N-5 (1953) 1958
OR21 Woleai OR21
Ifáluk

We picked up that word "boondock" in Guam, and very useful it proved to be. It became an important part of the Abbott-Bates vocabulary, and may well have also infected the Ifalukian speech. In Guam, it was used to refer to the wild tangle of miscellaneous vegetation that had taken over so much of the island after the disruption of the war.

The boondocks on Ifaluk were the parts of the atoll that were not clearly something else—that is, not coconut grove, not taro swamp, not household area. The boondocks were not exactly wild, because all sorts of useful things grew there, including planted coconuts and breadfruit trees. They were not exactly cultivated either. Such areas could thus hardly be called "jungle" or "scrub"; and "forest" seemed rather inappropriate. "Boondock" was just the word; though we could perhaps better have used the Ifalukian equivalent, niwel.

The boundary between the coconut grove and the boondocks was sharply defined: weeds and shrubs were kept cleared out of the coconuts only up to this definite line—the boondock line. This again roughly paralleled the lagoon shore, fifty or sixty yards in. We plotted it on our map, later, when the trail mapping seemed fairly well in hand.

The habitations, deep in the coconut grove and near the boondock line, were grouped into "households." The census showed that there were twenty-six such households on the atoll, eleven on the island of Falalap, and fifteen on Falarik. The Falarik households were not scattered evenly along the highway and lagoon, but formed two clusters or villages, one called Ranau, at the south end of the island—the Fan Nap was in the middle of this—and the other called "Falarik" (the address would probably be "Falarik, Falarik") with a gap of about a quarter of a mile along the broad highway between the two.

The whole system of land ownership of the island was built around these households, each of which had a name. Later in the summer we tried to map the holdings of one household, Falepenach. These holdings included not only the immediate vicinity of the living quarters, but also several patches of boondock and coconut grove on Falarik, and patches in the big taro swamp on Falalap. The patch arrangement seemed to provide that each household would "own" its share of each of the different kinds of land.

The households varied greatly in size, from one which included

41: Bates & Abbott N-5 (1953) 1958
OR21 Woleai OR21
Ifaluk

590 844 until it is able to walk, but the adopting mother shares the care and affections from the beginning; and when the baby is able to walk, it moves officially into the household of the adopting parents.

593 599 The child thus really acquires an extra set of parents, since it continues all through life to have close association with its real parents as well as with its adopting parents. The child acquires extra sets of "brothers" and "sisters" as well. Don found some difficulty with the word "brother" in teaching English since, while the Ifalukians all knew who were blood brothers and who were not, the matter seemed of little importance to them.

Our friend Yani, for instance, and his wife, Letaweriur, had three children. His oldest had been adopted into his mother's household, Soumat, and his next into his father's household (since his father was a re-married widower with no children by the second wife). Only the youngest had he kept to himself. Yet Yani was with all of his children every day. In this case, Yani and his wife, although they officially belonged in her household, Falepenach, spent most of their time in the Soumat household, since it was less crowded. This sort of casualness gave us a great deal of trouble with that census.

126 133 489 But this is straying from the problem of trying to get the Falarik trails down on the base map. With the broad highway and the canoe houses as fixed points of reference, we started to map the principal trails across the island. Falarik was a crescent, following the curve of the circular atoll reef; it was a little over a mile long, with an average width of about 300 yards. There were a dozen or so trails across the island from the inhabited, lagoon side, to the outer, ocean side.

The first of these, taking off from the canoe house beside the Fan Nap, began as a "highway" rather than a "trail." Like the broad highway, it was a wide, straight path, marked on both sides by lines of moss-covered coral rocks. On the left side of this trail was the dense vegetation of Katelu, the sacred site of the ancient Men's House which [1078] was in use in the time of Maur, the island's "culture hero." This sacred spot was never entered by anyone except Maroligar, who was its official custodian. As a result, it was a wild tangle of natural vegetation. At one point on the path by Katelu was a large, fresh-water pool in [643] which Fagolier, the paramount chief, sometimes bathed. On the right

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side of the trail there was an open grove of high breadfruit trees and other plantings of the Falivelu household.

This trail by Katelu we called the "schoolhouse trail"—because it led directly to the schoolhouse. The schoolhouse was a thatched shed built in a large clearing exactly half way across the island. It had been put up in accordance with instructions, either from the Navy or the Trust Territory, and contained a blackboard and a supply of essential equipment like boxing gloves and basket balls. But how would one go about introducing schooling on Ifaluk? Or should one? The answer to this latter, surely, is "yes" because willy-nilly the Ifalukians must learn to deal with the outer world in these days when that world has become a small neighborhood, and even Ifaluk cannot be protected by its remoteness. But the question of how to introduce this schooling is a complex one for which perhaps no one has a clear answer.

At any rate, the schoolhouse was not used for educational purposes during the period of our stay, but it did have uses. The clearing was a handy place to locate the rain gauge, and the schoolhouse itself, with its open sides, seemed a good place for the regular measurements of shade temperature and humidity. So the area became our meteorological station.

On this south end of Falarik the coconut grove of the lagoon shore extended right around the tip of the island to the ocean side, enveloping the schoolhouse yard. The trail was straight and formal, however, only as far as the school; beyond it became a winding footpath leading through the coconuts to the ocean beach.

Except for this southern end and the long stretch of lagoon shore, Falarik was covered with boondocks. Coconuts grew all through these boondocks, and the principal forest tree was breadfruit. But there were a dozen other kinds of trees, and a thick underbrush of bushes and ferns—ferns everywhere. There were many swampy areas in the center of the island, but the land became slightly higher toward the ocean shore, the surface rough with coral boulders, culminating in a definite "boulder ridge" paralleling the ocean beach.

The beach on the ocean side was narrow, sloping rather steeply from this boulder ridge. Along most of the length of the island the beach, too, was covered with coral rocks, but there were also stretches of coral

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133 sand. Out from the beach there was a hundred yards or so of coral platform, largely exposed at low tide, then finally the edge of the reef itself against which the great rollers of the Pacific broke their force all the year around.

133 361 The other inhabited island, Falalap, was rather different: a large, rounded blob sticking out into the sea and spoiling the neat circle of the atoll. The habitations were all on the northwest end of the island, across the narrow pass from Falarik. Here, too, there was a maintained park-like area, corresponding to the lagoon-side coconut grove of Falarik: but on Falalap, coconuts and large breadfruit trees were interspersed, giving a different "feel" to the landscape.

133 137 262 The center of Falalap was largely a great swampy area carefully cultivated by the women of both islands. Two kinds of aroids (taro), *Colocasia* and *Cyrtosperma*, were grown there for their edible, starchy roots which, with breadfruit, formed the staple food of the atoll. We did not get around to exploring this region in any detail until late in the summer.

123 206 The mapping operation was kept up fairly steadily for several days, but there were always intermissions. On Friday afternoon—the second day of the mapping—Bakal and Yani had no difficulty in persuading us to knock off mapping and go spear fishing. We all piled into Bronson's skiff and rowed over to the shore of Ella, outside the pass into the lagoon. Don was rather snooty about this skiff, remarking that a Western rowboat looked like a garbage scow beside the trim and speedy Ifalukian canoes. But Yani and Bakal liked it—perhaps partly because it was foreign, but also because it was steady and because it [136] could hold several people easily. Don, maintaining his scorn, called it the BWUP after one of the more ungainly species of trigger-fish.

227 Yani and Bakal each had steel-pointed wooden spears, about fifteen feet long; and short, slender steel spears. The long spears were for poking; the short spears were shot from a sling. The sling looked like a strip of inner-tube; at one end was a string loop, tied on firmly; at the other end the rubber was tied into a loop just large enough to slip over the thumb. With the rubber loop over the right thumb, the string loop was pressed over a slight notch in the butt of the spear, and the spear then simply pulled back with the left hand and let go. It worked like a Hawaiian sling spear, with the hand replacing the hollow bamboo grip.

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123 depths. The lagoon deepened rapidly, but there were areas, even in
004 the center, where it was only thirty or forty feet deep, and the shadows
● [133] of coral heads below could be made out.

Presently the water began to shoal again, as we approached the
502 reef. For a while the boat could be maneuvered through the sandy
226 channels among the coral heads but all hands had to walk across the reef itself while the boat was pulled through a narrow, shoal, "canoe pass" which, although only a few inches deep, was clear enough of coral to enable the canoes to be floated across the reef.

123 I was wearing alpargates, South American canvas sandals, excellent
133 for rain forest, but no good for coal reefs—this was the last day in the life of those sandals, and I had to use great care to make them last even for the walk across the reef. Yani and Bakal were managing nicely in their bare feet, which showed the incredible toughness that the human hide can reach, but even they were walking carefully.

It was something over a thousand feet across the reef. On the far side, on this still morning, there was only a gentle surf from waves averaging only a foot or so high. This was the lee side of the atoll, in terms of the trade winds, but at this season when the trades were not blowing and when the rain was often from the west, the breakers here could be very high, a pulsating line of white on the horizon from the view point of the Fan Nap.

The BWUP was pushed out beyond the breakers and boarded again.
[136] Here, outside the reef, was the shark zone, but none were seen all day. Yani said one of his relatives had been attacked by a shark in this region, but had saved himself by pulling off his loin-cloth and covering the eyes of the shark as he charged by.

226 The reef shelved off gradually and details of the bottom could be
133 made out clearly in twenty-five or thirty feet of water. The bottom was solidly encrusted with life—corals, coralline algae, sponges and the like—except for the narrow, smooth "surge channels," kept clear by the rush of water along the bottom returning from the surf. They were like ravines along a mountain front.

226 The canoes started playing out the coconut-bedecked rope, finally forming a huge semicircle out from the reef. The rope was weighed down with coral-block anchors and attached to each of the regularly-

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000 [126] We had aqualung equipment, but this was for Bob Rofen to use in his fish collecting in the fall. We didn't touch it because the supply of compressed air was very limited, and anyway we were unfamiliar with the equipment. We felt no need for deep diving, though. There was plenty to observe close to the surface, and we had "schnorkel" breathing tubes, which were useful if you wanted to keep your eye on the fish.

133 If we were going to be scientific and systematic about our daily swim, the first thing to do, we decided, would be to make a map of the swimming area, so we could tell where we were. The coral in the lagoon grew in large, irregular clumps which I called "coral heads" though they are more properly called "reef knolls" or "patch reefs." These were separated by open areas in which the bottom was clean, white sand.

The coral heads near the shore grew to a height where they were just awash at low tides. The tops of these were flat, and the coral was dead except around the margins. In deeper water, the "heads" were rounded and they occurred scattered everywhere over the lagoon floor as far out as we could see, peering into the crystal water.

The coral formations in shoal water showed up plainly on our aerial photographs as irregular dark patches, and from these I tried sketching the formations directly in front of the Fan Nap, where our fish watching activities were concentrated. We subsequently checked and modified the map on the spot with the row boat, and in the end got a pretty accurate picture of this bit of the lagoon.

Landscape (or seascape) features, to be remembered, need names, so we decided we should name the reef formations in the swimming area. First to be commemorated were our wives. Two prominent and complicated contiguous masses of coral, fairly near shore, were named Izzie (for Isabela) and Nancy by Abbott and Bates respectively. Various tributary fragments broken off from these masses were given names after Abbott and Bates children. Ted selected a pleasant, rather isolated and well-rounded head to name after Marie, with Nani, his daughter, somewhat farther out in the same line, and his son David off to the right.

A central group of reefs was named after the five chiefs of Ifaluk. A large and rather sterile mass near shore presented a problem in

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naming which Ted neatly solved by suggesting Beldame Flats, for the slightly wacky old lady who persisted in making eyes at him during evening dance rehearsals.

Out beyond and to the north of these discrete coral heads lay a great submerged mass of dead coral, which we decided to call the continent of Moo. Moo had a complex topography, with southern and northern outposts and an octopus point, only intermittently inhabited by octopuses during the summer. A great deal of my time was spent floating over the southern outpost of Moo where a big red squirrel fish (*Holocentrus spinifer* to ichthyologists) seemed to get as much pleasure out of watching me as I got out of watching him.

Each coral formation was staked out into a series of territories by little Pomocentrid fish, called "lejoc" by the Ifalukians. The lejoc were only about three inches long, but their belligerence in defending their territories was in no way proportional to their size. We spent a lot of time teasing them. A foot, a hand, any new and foreign object intruded into the territory always caused great indignation—was always the object of fierce attack.

Each fish defended a roughly circular territory two or three feet in diameter, with boundaries marked by features of the coral landscape, and with a centrally located crevice or hole where the lejoc would lurk when not warding off intruders.

Biologists define a "territory" as an area defended by an individual, a pair, or a group, against intrusion by others of the same species. Many kinds of mammals, birds, reptiles and fish show territorial behavior, though until recently the matter had been little studied in fish, and there is still a great deal to be learned. The lejoc were clearly territorial in the strict sense, individuals clinging to the same area day after day and defending it against intrusion. My big red *Holocentrus* may also have been showing territorial behavior, since he (or she?) stayed in the same small area off Moo all summer. But I never noticed the *Holocentrus* showing aggressive behavior. Perhaps the outpost of Moo was a "home range" rather than a "territory" for this individual: the difference would depend on behavior in relation to another *Holocentrus* swimming into the area, a situation that I never had a chance to observe.

The water was full of marvels. Don had a category of what he

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136 the summer. Just about the time that we had decided that this octopus had a permanent home there, it disappeared and our daily checks would reveal only the empty hole. Then Don found another small octopus living in a hole in the center of the coral we named after Maroligar.

The octopuses were suspicious creatures, and while they would often be partially outside when first found, they would slowly withdraw into the recesses of their holes under the steady gaze of the observer. There was always a pile of small coral fragments outside the hole, and as an octopus retreated, these fragments were pulled in by the sucker-covered arms to block the entrance—except that generally a small peep-hole was left, framing a watchful octopus eye.

The area around the hole on Maroligar reef was littered with debris from the meals of the octopus: empty shells, claws and legs from the crabs it had eaten. Don picked up all of these and saved them—a food record on the octopus. Every day he would find the remains of more crabs, so that he got a record of the diet of this crab-loving octopus over a period of several weeks.

Then, one day, the hole on Maroligar was empty, and it remained empty for quite a while. Thus we got the impression that these octopuses would make headquarters in one place for days, or weeks, but that they did not stay permanently in any one place, did not establish "territories" the way so many of the other lagoon inhabitants did.

I only once saw an octopus swimming in the daytime. I wouldn't have seen this if it hadn't moved—a piece of a brown coral mass I was looking at suddenly gave a few convulsive movements and then shot off, jet fashion, with trailing tentacles, to the next coral head where it stopped, again blending perfectly into the background. I swam slowly toward the place where it had disappeared, but just as I got near enough so that I could distinguish octopus from coral, it took off again, this time disappearing into the depths of the lagoon.

133 126 I have been writing glibly about "coral" and "coral heads." Actually, these patch reefs were built up of a wide variety of lime-secreting organisms, many of them not true corals. We picked one of the patch reefs, Maroligar, and tried to make a map of the different kinds of organisms that were contributing to its structure. We thought this

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would be simple and easy, since Maroligar was a small patch reef about six yards long and a couple of yards wide. It turned out, however, to be a complicated operation, which kept Don and me busy for many hours.

Much of the trouble was technical—mostly the problem of working in the water with dry materials. When we had got an outline map made, we decided to spot the different kinds of coral and coral-like organisms on our map with colored pencils. But the colors, when wet, would blur! We had a canvas-covered inner-tube that served as a raft. We would tow mapping gear and towels on this, out to position. Then I would stand up, on some convenient part of Maroligar, dry my hands, and start trying to mark down the corals as Don, diving around with goggles, called them to me. He would come periodically to peer at my map, point with dripping finger to where I had the thing wrong, and with this well-placed drip of water that bit of my map would really be spoiled. Or I would try to move, and slip, splashing water over everything. At times we got completely fed up with the project, but we kept on and finally got a reasonable map that, with all of the different colors, was almost as pretty as Maroligar itself.